REMARKS

The purpose of this Preliminary Amendment is: (1) To provide a Substitute Specification and an Abstract which are in formats customary for U.S. Patent Applications and which are also expressed in less stilted and more readable idiomatic english; (2) To amend the claims in this Application to eliminate multiple-dependent claims therefrom; (3) To establish a Filing Fee; and (4) To amend the claims so that they are more nearly in a format customary of U.S. Patent Applications. It is to be understood, nevertheless, the claims originally set forth remain part of the original disclosure with the Application. As amended, the Application has thirty (30) claims, three (3) of which are independent claims. Accordingly, a Filing Fee of $435.00 appears to be required, and our check to cover same is submitted herewith. If this is in error, the Commissioner of Patent and Trademarks is authorized to debit or credit our Account No. 13-2000 as appropriate.

Respectfully submitted,

MASON, MASON & ALBRIGHT

By _____
Penrose Lucas Albright
Registration No. 19,082

2306 South Eads Street
Post Office Box 2246
Arlington, Virginia 22202
Tel. (703) 979-3242

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marked-up copy for comparison
Abstract of Disclosure

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(71) Applicant *(for all designated States except US)*: MAASLAND N.V. [NL/NL]; 10 Weverskade, NL–3155 PD Maasland (NL).

(72) Inventor; and

(75) Inventor/Applicant *(for US only)*: VAN DEN BERG, Karel [NL/NL]; 5 Boterbloemstraat, NL–2971 BR Bleskensgraaf (NL).

(74) Agent: CORTEN, Maurice, Jean, F., M.; 10 Weverskade, NL–3155 PD Maasland (NL).

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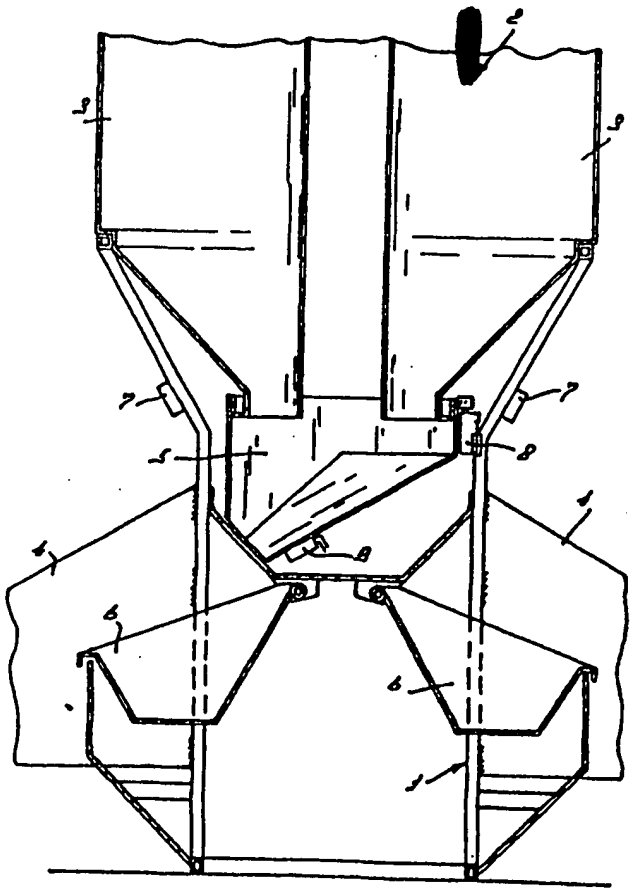
(54) Title: A FEEDING AND/OR DRINKING COLUMN ON BEHALF OF ANIMALS

(57) Abstract

A feeding and/or drinking column for animals, such as cows or goats, said column comprising a central axis surrounded by several reservoirs (3) and feeding troughs (6), as well as at least one metering device (5) for dosing feed and/or drink from at least one of the reservoirs (3) to at least one of the feeding troughs (6), while the feeding and/or drinking column is provided with a framework (1) located around the central axis, to which framework (1) primarily the feeding troughs and reservoirs (3) are fitted.



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RELATED APPLICATION: This is a Continuation of International Application No. PCT/NL99/00791 filed December 21, 1999.

A FEEDING AND/OR DRINKING COLUMN ON BEHALF OF ANIMALS

FIELD OF THE INVENTION:

The invention relates to a feeding ~~and/~~or drinking column for animals, such as cows, said column comprising a central axis surrounded by several reservoirs and feeding troughs, as well as at least one metering device for dosing feed ~~and/~~or liquid from at least one of the reservoirs to at least one of the feeding troughs.

BACKGROUND OF THE INVENTION:

~~Such a feeding and/or drinking column is known.~~

A disadvantage of ~~this~~ construction is the size of the feeding ~~and/~~or drinking column as a result of which the latter occupies much space in the shed. Furthermore, ~~the production of the feeding and/or drinking column entails high~~ its construction is costly because ~~there are used~~ components that are quite variable ~~vary per feeding and/or drinking column~~, depending on the number of animals to be fed and the specific wishes of the user.

SUMMARY OF THE INVENTION:

An object of the invention ~~The invention aims at~~ is to obviate the above drawbacks. For ~~that~~ such purpose the feeding ~~and/~~or drinking column is provided with a framework located around ~~the~~ a central axis, to which framework primarily the feeding troughs and reservoirs are fitted. In this manner ~~there is achieved a~~ construction occupying little space. ~~The~~ Compactness may be increased in that a cross-section of the framework perpendicular to the central axis is substantially circular. There is also obtained a great accessibility of the feeding troughs in that the circumference of the feeding column is substantially circular. This makes it possible for the livestock to reach the feeding troughs easily from all directions. In this manner the capacity of the feeding ~~and/~~or drinking ~~column~~ can be utilized as efficiently as possible.

The ~~feeding and/or drinking~~ column is provided with partitions disposed between the feeding troughs and having such dimensions that they prevent the animals from disturbing each other during eating or drinking, or eating one another's feed. In this manner the animals are able to eat quietly, without being distracted by animals in the vicinity of the feeding troughs. The shortest distance between two adjacent partitions

equals approximately the width of the outside of the feeding trough. Thus there is again achieved a great compactness of the feeding column. In a preferred embodiment of the invention, the number of partitions equals the number of feeding troughs.

The ~~feeding and/or drinking~~ column, can easily be assembled because ~~one or more~~ components fitted to the framework are detachable. One or more components can be disassembled without tools being used, so that they can easily be fitted to the framework and be removed therefrom. The aforementioned components comprise a partition ~~and/~~or a reservoir ~~and/~~or a feeding trough. Finally a component may also comprise a metering device. In this manner the ~~feeding and/or drinking~~ column can easily be adapted to the user's wishes. Exchanging components is also very simple and the capacity ~~of the feeding and/or drinking column~~ can be utilized optimally and efficiently.

~~At least~~ one subset of ~~the~~ components ~~is~~ similar in shape. Because of the fact that the ~~feeding and/or drinking~~ column consists of uniform components, said components can be produced in large numbers, ~~so that the~~ production costs remain low.

In a preferred embodiment of the invention, ~~the~~ storage room is located above the feeding troughs. As a result thereof a separate drive unit for transporting the feed is not required, as the gravitational force causes the feed to flow from the storage room to the feeding troughs. The metering device is preferably located in the middle of a cross-section perpendicular to the central axis of the framework so as to be able easily to serve the feeding troughs. Due to the fact that the reservoirs are almost contiguous they occupy little space. For the purpose of filling the reservoirs the latter are provided with a ~~filling aperture~~. The feeding troughs are almost contiguous as well, so that ~~the~~ maximum number of feeding troughs can be disposed along the circumference of the ~~feeding and/or drinking~~ column. In a preferred embodiment of the invention, the number of feeding troughs equals the maximum

number of animals to be fed that are able to position themselves side by side along the circumference formed by the totality of feeding troughs.

In a preferred embodiment of the invention, at a specific radius of the circular circumference of the framework the number of feeding troughs for feeding cows ~~amounts to~~ 10 twelve.

According to another inventive feature, the ~~feeding and/or drinking~~ column is provided with at least one weighing device which is suitable for being used in a feeding trough ~~and~~/or a metering device. By means of said weighing device it is possible to ~~establish~~ regulate the amount of feed in the metering device ~~and~~/or the feeding trough. At least part of the weighing device is in particular movable about a central axis. Therefore, one or more weighing devices that can be used both for the metering device and for one or more feeding troughs, will suffice. This has the advantage that the cost of ~~some~~ several weighing devices can be saved.

According to an inventive feature, the metering device is disposed between at least one reservoir and at least one feeding trough. In this manner it is achieved that the feed ~~can~~ flows by gravitational force from a reservoir via the metering device to the feeding trough, so that ~~no~~ separate drive means are required. The metering device comprises at least one storage room, so that the feed or the ingredients thereof are not directly supplied to a feeding trough. The metering device may also comprise mixing means for mixing the material present in the storage room. The animals are thus prevented from eating selectively only specific feed ingredients. In a preferred embodiment of the invention, the metering device is movable about a central axis, and in particular rotatable about this central axis, so that it is possible to serve several feeding troughs by means of the metering device. To that end, according to an inventive feature, for moving the metering device the latter is provided with a drive unit.

In accordance with the invention, the feeding ~~and/or drinking~~ column further comprises removing means for removing substances that are unfit for consumption from the flow of feed. In this manner undesired feed ingredients, such as metal objects and plastics, can be removed from the feed. The removing means comprise at least one magnet ~~and/or~~ at least one electromagnet ~~and/~~or at least one reel. With the reel it is possible to remove metal objects from the flow of feed by means of eddy currents.

The ~~feeding and/or drinking~~ column is provided with identification means for identifying an individual animal, while the column is capable of operating fully automatically. According to an inventive feature, before the animals are fed by means of the ~~feeding and/or drinking~~ column, the individual animal is identified, after which, by means of the metering device, the feed is composed of ingredients emanating from one or more reservoirs, according to the nutritive needs of the individual animal, and the feed is supplied to the feeding trough. By means of a weighing device in the metering device, the amount of feed ~~can be attuned~~ to the nutritive needs of the individual animal. In accordance with another inventive feature, during pouring the feed into a feeding trough, the amount of feed is ~~attuned~~ to the nutritive needs of the individual animal by means of a weighing device. Finally the amount of feed can also be ~~attuned~~ to the nutritive needs of the individual animal by means of ~~the~~ weighing device in a feeding trough. Depending on the location of one or more weighing devices in the ~~feeding and/or drinking~~ column and the assembly of the various components of ~~the feeding and/or drinking~~ column, various configurations of various components are possible, while in the various configurations the weight of the feed supplied can each time be determined.

By means of ~~the~~ weighing device, which is in connection with the feeding trough, the eating speed of an animal is ~~established~~ and the value thereof is subsequently stored in a memory. The nutritive needs of the individual animal ~~are~~

determined with the aid of one or more values stored in a memory and relating to the eating speed of the individual animal. The eating speed of an animal having a great nutritive needs will be considerably higher than that of an animal having a small nutritive needs. The small nutritive needs may result for example from an animal's illness. So the eating speed also relates to the animal's condition. According to a last inventive feature, the feed that has not been consumed by the individual animal is automatically removed from the feeding trough with the aid of removing means.

BRIEF DESCRIPTION OF THE DRAWINGS:

The invention will now be explained in further detail with reference to the figures.

Figure 1 is a side view of the framework provided with a storage room;

Figure 2 is a plan view of the framework according to cross-section II-II;

Figure 3 is a cross-sectional view of a feeding and/or drinking column, and

Figure 4 is a plan view of a feeding and/or drinking column provided with several reservoirs.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

In the embodiment shown in Figure 1, the framework 1 has a substantially circular circumference. At the upper side of the framework 1 there is located a storage room 2 consisting of several reservoirs 3. On the framework 1 there are provided facilities for placing the reservoirs 3.

The framework 1 is also provided with partitions 4 which are detachably arranged on the framework 1. The framework 1 is preferably designed as a steel tubular construction.

Figure 2 is a cross-section according to the line II-II. The framework 1 is divided into three segments per quarter. In this embodiment, total twelve cows can be fed at the same time.

Figure 3 is a cross-section of the feeding column, showing the framework 1, the reservoirs 3, the partitions 4, the metering device 5 which may be provided, if desired, with a storage room, the feeding troughs 6, identification means 7 and a drive unit 8 for the metering device 5. Because of the cylindrical geometry of the ~~feeding and/or drinking~~ column the construction occupies little space, while the ~~feeding and/or drinking~~ column is optimally accessible to the animals from all directions. In the metering device 5 there is disposed an electromagnet 9 by means of which metal objects ~~can be~~ are removed from the flow of feed.

Figure 4 is a plan view of the ~~feeding and/or drinking~~ column, showing the reservoirs 3 with filling apertures 10, the framework 1 and the partitions 4.

Although I have disclosed the preferred embodiment of my invention, it will be understood by those skilled in the art that it is capable of other adaptations and modifications within the scope of the following claims.